B.—GOLD MINING.

I.—Gold Production, Dividends and Royalty for the calendar year 1913.

The nominal capital of all the Companies carrying on operations in Mysore was—

	£.	s.	d.
in December 1913	1,566,000	0	0
and in December 1912	1,566,000	0	0

or the same for both the years.

The amount of the above capital called and paid up was—

	£.	s.	d.
in December 1913	1,516,772	0	0
and in December 1912	1,516,772	0	0

or the same for both the years.

The number of Companies (1) which carried on operations, (2) which paid dividends and (3) which produced gold, but paid no dividends, during the year was in each case the same as for the year 1912, *viz.*, 5, 4 and 1 respectively.

The total value of bullion produced—	£.	s.	d.
during 1913 amounted to	2,150,193	11	10
and during 1912	2,158,361	18	10
being a decrease of ...	8,168	7	0

or a decrease of 0·37 per cent, as against an increase of 1·34 per cent in 1912.

The total amount paid in dividends—	£.	s.	d.
during 1913 was	739,550	18	0
and during 1912	749,398	5	4
being a decrease of ...	9,847	7	4

or a decrease of 1·31 per cent as against a decrease of 3·19 per cent in 1912.

The total dividends paid during the year amounted to 61·18 per cent of the paid-up capital of the dividend paying Companies or to 48·76 per cent of the paid-up capital of all the working Companies. The corresponding figures for 1912 were, respectively, 61·99 per cent and 49·41 per cent.

The royalty due to Government on the gold won—	£.	s.	d.
during the year 1913 was	126,219	10	9
as against in 1912	126,653	1	1
being a decrease of ...	433	10	4

the decrease being 0·34 per cent, as against an increase of 1·43 per cent in 1912.

II.—Total Gold Production, Dividends and Royalty from 1882 to the end of 1913.

The total value of gold bullion produced from the commencement of mining operations is—

	£.	s.	d.
up to the end of 1912	38,144,164	0	9
and for 1913	2,150,193	11	10
Grand Total ...	40,294,357	12	7

The total dividends paid—			
up to the end of 1912	15,188,881	17	0
and for 1913	739,550	18	0
Grand Total ...	15,928,432	15	0

The total amount of royalty which has been paid to Government is—			
up to the end of 1912	1,941,732	10	0
and for 1913	126,219	10	9
Grand Total ...	2,067,952	0	9

III.—Gold Production for the six months ending June 30th, 1914.

NAME OF MINE		Fine Ozs.	£ Stg.	Fine Ozs.	£ Stg.
Mysore Mine ...	Mill ...	93,774	398,539·50		
	Cyanide ...	11,757	49,967·25		
	Total ...			105,531	448,506·75
Champion Reef Mine ...	Mill ...	48,916	207,893·00		
	Cyanide ...	13,226	56,210·50		
	Total ...			62,142	264,103·50
Ooregum Mine ...	Mill ...	31,489	133,828·25		
	Cyanide ...	9,634	40,944·50		
	Total ...			41,123	174,772·75
Nundydroog Mine ...	Mill ...	32,713	139,030·25		
	Cyanide ...	2,856	12,138·00		
	Total ...			35,569	151,168·25
Balaghat Mine ...	Mill ...	6,204	26,367·00		
	Cyanide ...	1,362	5,788·50		
	Total ...			7,566	32,155·50
			Gross Total ...	251,931	1,070,706·75

IV.—Number of Mines at work.

Mining operations were in progress on 15 mining and prospecting blocks during the year 1913-14 as against 16 during the previous year work having ceased on the Shiddarhalli Mine. These 15 blocks are distributed as follows:—

Kolar Gold Fields.

1. Mysore Block (Mining Leases Nos. 127, 128 and 134). The Mysore Gold Mining Company, Ld.
2. Champion Reef Block (Mining Leases Nos. 121 and 136). The Champion Reef Gold Mining Company of India, Ld.
3. Ooregum Block (Mining Leases Nos. 132 and 137). The Ooregum Gold Mining Company of India, Ld.
4. Nundydroog Block (Mining Leases Nos. 131, 135, 138, 139, 140 and 143). The Nundydroog Company, Ld.
5. Balaghat Block (Mining Lease No. 120). The Balaghat Gold Mining Company, Ld.
6. New Kempinkote South Block (Mining Lease No. 129). The New Kempinkote Gold Field, Ld.
7. New Kempinkote Block (Mining Lease No. 130). The New Kempinkote Gold Field, Ld.
8. Ahmed's Block (Mining Lease No. 111). Messrs. Jahgirdar Mohamed Abdur Rahim Sahib and Khajee Mohamed Ibrahim Sahib, Gosha Mahal, Hyderabad (Deccan).
9. East Betarayaswami Block (Mining Lease No. 118). Messrs. Paul Knight and Robert Knight.—(under option) to East Betarayaswami, Ld.

Shimoga District.

10. Kudrikonda Block (Prospecting License No. 405). Eastern Development Corporation, Ld.
11. Kodikoppa Block (Prospecting License No. 361). Mr. D. Shama Rao.
12. Palavanhalli A Block (Prospecting License No. 399). The Gold Fields of Mysore and General Exploration, Ld.
13. Palavanhalli B Block (Prospecting License No. 400). The Gold Fields of Mysore and General Exploration, Ld.

Kadur District.

14. Jalagargundi Block (Prospecting License No. 340). The New Shimoga Gold Fields, Ld.

Mysore District.

15. Woolagiri Block (Mining Lease No. 133). The Nanjangud Gold Fields, Ld.

Of the above only the first five mines on the Kolar Field were gold producers.

V. Progress Notes from Mines.

(a) Kolar District.

Mysore Mine.

This mine had a record year in 1913; more quartz was crushed, tailings and slimes treated and gold won than in any previous year since its formation; the dividends were maintained at the same rate as in 1912.

The ore reserves showed an increase of 39,104 tons, the figure standing at 1,377,102 tons. A further sum of £25,000 was added to the Reserve Fund making the total £150,000.

Compared with former years, the developments in the bottom workings of Ribblesdale's Section have not been satisfactory of late. This is the main section of the mine and for some time past a large amount of driving and sinking has been done without disclosing anything of the nature of a valuable ore-shoot. The quartz continues, but it has been low in value. This state of affairs reminds one of the extensive zone of poor ore which was passed through some years ago at a higher level and which was succeeded by several valuable shoots. An improvement may reasonably be hoped for as the schists may be expected to continue to a much greater depth. Owing to the moderate dip of the veins in the Mysore Mine the bottom workings are not nearly so deep (vertically) as those of Champion Reef and Ooregum where good ore continues to be opened up.

No sinking was done in Edgar's Shaft, but work was continued in making excavations at the 8th level for the necessary engines, etc., in connection therewith.

Good progress was made with the sinking of McTaggart's Vertical Shaft; by the end of June it had reached a total depth of 1,136 feet of which 1,086 feet were bricked.

The Slimes Plant, to which reference was made last year, is now in course of erection and will probably be in operation by the end of 1914.

Arrangements are in hand for filling the stopes in Tennant's Section by means of waste rock sent down from surface. For this purpose a shoot to connect with Hancock's Shaft at a depth of 58 feet was sunk, and a railway from the dump near Crocker's Shaft is in course of construction.

Mysore Southern Extension.

Work was carried on for the Syndicate by the Mysore Mine at two points, *viz.*,—2,160 and 2,385 foot levels, both extensions of drivages south from McTaggart's Shaft of the above mine.

The 2,160 foot level was extended 464 feet. The lode, for a length of 284 feet, varied from 6 inches to 4 feet in width and in assay value from a trace to 9 dwts. The total length of the drivage was 477 feet at the 30th June, the end being in country rock.

The 2,385 foot level was driven 170 feet. The end being in barren ground, after passing through quartz averaging 13 inches in width assaying 4½ dwts. for a length of 81 feet, driving was temporarily suspended. A crosscut east was put out for a distance of 38½ feet from the end but nothing was met with. Likewise at a point 114 feet from the beginning of the level a cross cut west was driven 72½ feet but without making any discovery.

Champion Reef Mine.

This mine has maintained its position, the record for the past year being an excellent one. The gold returns were better and the profits exceeded those of the previous year in face of an increase in the costs; the latter can be partly accounted for by the larger quantity of slimes treated.

The comparatively slight increase in the ore reserves is due to the fact that certain blocks estimated as containing over 46,000 tons of low grade ore have been omitted; these have been left to reduce the risk of air blasts in the stoping area with very beneficial results up to date.

The following comparative table speaks for itself:—

	1913-14	1912-13	1911-12
Number of air blasts ...	290	475	331
Number resulting in damage ...	5·5%	8·2%	12·4%

The number of shocks recorded as "very heavy" was only 20 as compared with 97 in the previous official year. No very serious damage was done, nor was the working of the mine affected to any appreciable extent.

Circular shaft.—Sinking and bricking have now been completed, the total vertical depth of the shaft being 3,861 feet or 30 feet below the 42nd level. The main loading station will be at the 41st level and the principal station for landing persons at the 42nd level. From below the 40th level ore will be raised by large, specially designed air-hoists, through secondary shafts which are being sunk.

The equipment of this shaft was started in January last working upwards from the bottom and, by the end of June, the byatts and rails had been brought up a total distance of 1,368 feet, leaving approximately 2,500 feet still to be done. The surface plant is practically completed.

Filling and packing.—The system of filling worked out, stopes has been extended and accelerated, waste rock being lowered from the surface for this purpose in addition to that sorted out underground.

Ventilation.—Special attention continues to be given to ventilation. Some interesting figures in regard to temperatures are supplied by the mine from which the following are taken:—

Circular Shaft, 41st crosscut, the variation was 1° between 12 noon and 12 midnight, *i.e.*, from 86° to 87° F.

Carmichael's Shaft, 41st plat between 12 and 1 p.m. 90° to 92° F.
Do 46th plat between 12 and 1 p.m. 94° to 95° F.
Do near the top, between 12 and 2 p.m. 83° F.
Garland's Shaft, near the top, between 12 and 2 p.m. 83° to 84° F.

The observations taken cover a period of 30 days (June 1914); the Circular Shaft is downcast and the other two upcast. The immense volume of fresh air which now reaches the lower workings through the New Circular Shaft has very materially improved conditions of work.

Ore-treatment.—A Tube Mill Plant for re-grinding the coarser products from the Mill has been erected and will start work in September next. The tailings from the Mill are elevated by air lifts to a series of cone classifiers. In these the tailings are separated into three grades the finer portion going to the Cyanide and Slime Plants, while the coarser material passes to the Tube Mills, of which there are three. They are there reground and passed over plates for amalgamation. The tailings again pass to the cones for separation and thence to the Cyanide and Slimes Plants.

A Concentration Plant for separating the coarser and richer portion from the sand of the old tailings dumps is also in course of construction. The Concentrates will be sent to the Tube Mills for regrinding and subsequent treatment.

Air compressing plant.—A mixed pressure Steam Turbo Air Compressor of 412 H.P. has been erected and put to work. This machine, which is the first of its kind in India, utilizes the exhaust steam from the 2,000 H.P. winding engine at Carmichael's Shaft. When the winding engine is idle and exhaust steam is not available, it is run by live steam from the same boilers that supply the winding engine, the change being effected automatically. The plant delivers 25,000 cubic feet of free air, compressed to 60 lbs., per minute and by utilizing the otherwise waste exhaust steam the cost of compression compares favourably with that of electrically driven compressors.

A new Rotary Compressor of 585 H.P. is on order to augment the compressing plant as the demand for air is a constantly increasing one. The air is now largely used for ventilating the working faces as well as for driving the machines underground.

Ooregum Mine.

As a result of the improvement in the underground developments last year, the output of gold for 1913 was the largest in the history of the Company; there was also a slight increase in the ore reserves which were estimated at 187,000 tons.

All three sections of the mine are continuing to open up well and it is gratifying to note that the discovery recorded last year south of the dyke in Taylor's Section is holding on, quartz of good value having been met with in the 44th, 46th and 47th levels. A crosscourse interfered with and displaced the lode in both Oakley's and Bullen's Sections at the 46th level, but below this payable ore has again been encountered, the bottom level of the mine being in rich quartz.

Future mine development.—Oakley's Incline Shaft has now reached the 53rd level making a total length of 3,200 feet, this being the full depth for which the engine at the 21st level was designed; sinking will be suspended and a vertical shaft which it is proposed to sink to a depth of 3,000 feet commenced at the 52nd level. This shaft will be fitted with double skip-roads and double cage-roads and chambers will be cut to accommodate winding engines for raising and lowering persons and hoisting stuff.

Taylor's Main Winze, which is now 1,000 feet in depth has also been suspended and a vertical shaft is being started at the 52nd level. This is a small shaft to help with the development and the ventilation of Oakley's Section.

Ventilation.—In view of the great depth reached by the underground workings and consequent increase in temperature special attention has been paid to this subject with beneficial results.

A 50" electrically driven Sirocco fan was installed at the top of Taylor's Vertical Shaft at the 32nd level; this has improved the ventilation in the main thoroughfares to the 50th level. The three 25" air-operated fans which are working at different places in the mine have given such good result that it has now been decided to instal a 100 H.P. Motor and fan at the top of Bullen's Shaft (surface) and a 50 H.P. Motor and fan at the top of Bullen's Incline at the 40th level to force fresh air into the workings. These fans will not only ventilate the lower levels, but will also help the stopes between the 30th and 38th levels, which have become very hot since Taylor's Vertical was walled off to draw the hot air from the bottom of the mine.

A large electrically operated "Ozonair" set is on order which it is proposed to fix at the 52nd level, Oakley's Section; from this it is hoped to get increased efficiency by purifying the air.

Ice to the extent of 100 lbs. is being sent down daily to cool the drinking water at the 52nd level, Oakley's Shaft; this is much appreciated by the men working there and in the bottom levels.

Ore treatment plant.—Good progress has been made with the reorganization of the above plant and it is hoped that the Tube Mills and Vacuum Plants will be started before the end of the year.

It has recently been decided to go in for a Retreatment Plant; by this means a considerable profit should be obtained from retreating the cyanide tailings of which there are over a million tons in stock.

Nundydroog Mine.

There was a reduction in the output of gold compared with the previous 12 months, but this can be accounted for chiefly by the fact that nearly 10,000 tons less of quartz were crushed, following the policy instituted of temporarily restricting the monthly crushings owing to poorer developments in the bottom levels.

A fair measure of success has attended the latter and it is hoped to be able to maintain the returns at their present level, but much depends on the ore-bodies encountered in the bottom workings showing no further diminution in width, the tendency being unfortunately in that direction at present.

Circular shaft.—This was marked out some 3,000 feet west of Kennedy's Shaft and started in the middle of April; by the end of the following month it had reached a depth of 32 feet. No sinking was done in June, owing to the requisite equipment for continuing the same being put in hand. It is proposed to take it down to a vertical depth of 4,000 feet.

The house and loadings for the new electrical hoist at the Oriental Shaft are nearing completion. This engine will handle 2 tons of stuff in self-dumping skips from the 4,000 feet level at a maximum speed of 1,875 feet per minute.

The erection of the Slimes Plant, which will eventually handle some 400 tons of slime per day, is well forward and should come into service in a few months' time. The reorganization of the Percolation Plant will then be taken in hand; later Tube Mills will be erected for the regrinding of the current ore plus the old tailings; the whole plant should be running in 18 months' time.

Balaghat Mine.

Exploratory operations have been vigorously pursued during the past 12 months and excellent progress made in extending some of the lower drivages. From the end south at the 3,175 foot level, Ogle's Main Winze, a crosscut east, after being driven some 70 feet, intersected a reef which has varied both in width and value. At the end of June, this reef was 4 feet wide and well-defined carrying stringers of low grade quartz. A winze sunk below this level also followed a well-defined reef with occasional good assays; driving will shortly be commenced at the 3,300 foot level.

In view of the above discovery, the prospects in this part of the mine are considered to be brighter than they have been for some years past. The west reef has continued to open up a certain amount of good stoping ground in the upper levels.

The exploratory work carried out at the northern end of the mine has up to present met with no success.

East Betarayaswami, Ld.

An option has been acquired by the above Company for a period of two years under agreement with the Proprietors of the East Betarayaswami Mine.

Operations were accordingly restarted in March 1914 and the water pumped out of the mine. The underground and surface works were put in order and the No. 1 shaft partly retimbered.

Work is at present confined to sinking this shaft and the No. 1 winze north. The former has now reached a depth of 49 feet below the 150 foot level and the latter 136 feet, 6 inches below the same level. In the winze a well-defined lode has been followed, assays up to 15 dwts. having been obtained. At present the quartz averages 2 feet, 3 inches in width with an assay value of 3 dwts. Both these points are being worked by hand labour and as there is a good deal of water to contend with, progress is naturally slow.

The scheme in hand is to sink both the shaft and the winze to a depth of 300 feet below surface, drive north and south on the reef from the bottom of the latter and communicate by means of a crosscut to the shaft for ventilation and hoisting.

Ahmed's Block.

All work on this block was suspended in July 1913, pending the result of the litigation between the lessees regarding certain rights. The water has risen to within 12 feet of the top of the new shaft referred to in last year's report.

(b) Mysore District.

The work undertaken last year at the Woolagiri Mine was brought to a close in August 1913 as the developments were not sufficiently encouraging to warrant further expenditure.

(c) Kadur District.

Work at the Shiddarhalli Mine has been suspended owing to want of funds. The country is very disturbed and the distribution of gold very erratic and not sufficiently encouraging to warrant further expenditure at present. Operations on the Nandi Hoshalli Block have been abandoned as the work failed to disclose anything of value. The Jalagargundi Mine was sampled during the previous year on behalf of one of the Kolar Companies, but the results were not considered to be sufficiently good to warrant further action. The licensees were not however satisfied with the results of the investigation and during the year under report a large sample was taken from the 200 foot level at No. 2 shaft. The work consisted in stoping out a length of 150 feet of the east drive for a height of 5 feet. The amount of ore broken out was 260 tons and the whole was sorted and graded. A sample of all the ore broken gave an average of 10 dwts. 6 grains per ton and if the white footwall quartz is picked out the balance, amounting to 69 per cent, gives an average of nearly 14 dwts. The results of the test are encouraging and it is hoped that funds will be forthcoming to carry on further work.

(d) Shimoga District.

A good deal of prospecting work has been carried out on several licenses in the neighbourhood of Kudrikonda, Palavanhalli and the old Honnali Gold Field. Many of the outcrops show small quantities of gold but the amount is usually negligible at a few feet from surface. In one case however a small reef, varying from 6 inches to 3½ feet in width, yielded a number of samples assaying several ounces to the ton. Two samples taken by the department gave respectively 10 dwts. and 4 ozs. 8·5 dwts. Outcrops have been traced from about 400 feet, but it is doubtful if they are continuous and as the best portions lie in a wet nulla where pumping machinery would be required it has been decided to defer sinking operations for the present. The exposure probably belongs to the series of small rich lenses many of which have been found and tested in various parts of this district but none of which have so far proved to be sufficiently continuous or connected to be worth working.

A large number of washings have been made which show that gold is widely distributed, but want of water is against the probability of any profitable work being undertaken. Systematic efforts are being made to trace the gold towards its point of origin by careful examination of the character of the alluvial grains and this work is still in progress.

(e) Alluvial Washings.

A number of samples of alluvial materials have been taken from time to time by officers of the department during survey work and these indicate that the detrital materials derived from certain of the Shimoga schists contain small quantities of gold. Prospecting work in the neighbourhood of Saulonga has shown that in some places the washings may go as high as a few dwts. to the ton though the average over any workable area is very much less. Whatever prospects there might be of finding deposits of workable grade in that locality are practically eliminated by the lack of the necessary water for washing on a large scale. Under these circumstances, it was considered very desirable to make an extended examination of the alluvium in the neighbourhood of the Tungabhadra river which cuts across these particular schists between Shimoga and Honnali.

An extensive series of washings were undertaken along and near the river, the samples which vary from 1 to 6 tons in weight being washed in a cradle constructed for the purpose. The results of these large samples have been most disappointing in spite of the practically universal presence of gold, sometimes of fair grade, shown by ordinary panning. An average

of all the tests made gives a result which does not exceed 1 grain per cubic yard and the best result obtained was only 3¼ grains per cubic yard. These results are too low to hold out any prospect of profitable working. In the case of the 3¼ grains test, the results would be worth following up if the character of the deposit was favourable, but unfortunately this is not the case as the gold occurs in a hard gravel about 1 foot thick fringing the bed of the river and if it extends laterally beneath the river bank some 10 feet or so of hard clay overburden would have to be removed to get at it. Under these circumstances, the prospects of work on a large scale cannot be regarded as encouraging, though it is difficult to understand why the gold should not occur in more highly concentrated patches of workable extent.

VI.—Electric Power Supply.

(*a*) *Cauvery System.*

Work has been carried on, uninterruptedly, throughout the year on the Kannambadi Dam for the Cauvery Reservoir. Progress has been rather slower than was anticipated owing to the necessity of carrying the foundations on either bank somewhat deeper than was originally estimated. The foundations have now been completed across the whole of the river bed and for some distance on both banks and the masonry has been raised somewhat above river level. Work is at present proceeding on the erection of the large central sluices. It is hoped that it will be possible to store a certain amount of water by the end of 1915.

During the current year there was a considerable shortage of water at the Sivasamudram Generating Station between the middle of March and the end of June and this involved serious curtailment of the Power Supply to the Kolar Field.

Development work on the Field was accordingly hindered and much reduced but the mills were kept supplied and the output of gold was not materially affected.

(*b*) *Kolar Mines Power Station.*

The following notes have been kindly furnished by Mr. F. M. Nicholl, Chief Electrical Engineer.

Seventy Motors were connected to the distribution system of this Station at the 30th June, aggregating 2,042 H.P. driving intermittent loads, and thirteen Motors, aggregating 3,267½ H.P. operating Winding Engines and Hoists, giving a total of 83 Motors for all purposes aggregating 5,309½ H.P.

The following were the numbers of the Board of Trade Units sold for the various purposes :—

Intermittent Power.	Hoisting.	Lighting.
22,90,449	19,52,810	7,08,060
Total Units sold ...	.....	49,51,319

The amount of power sold during the twelve months under review was 3·45 per cent greater than the amount sold during the preceding year.

The present rates charged for the supply of current are as follows :—

Intermittent and Hoisting	... 1½*d.* per unit.
Lighting	... 3*d.* per unit.

The average price charged for all classes of supply during the year was 1·5033*d.* per unit.

About the middle of March the level of the water in the Cauvery River at Sivasamudram commenced to fall and from that time until the end of June there was a considerable shortage in the supply of power. When towards the end of April the supply fell to below 2,000 H.P., the Reserve Steam Plant in the Kolar Mines Power Station was placed in operation and utilized to maintain the electric hoisting service until the last week in May, when an appreciable increase took place in the supply of power from the Cauvery System.

At the 30th June last, 69 motors, aggregating 8,916 H.P., were connected to the Cauvery system.